

THE INFLUENCE OF TWO RACES OF THE BURROWING NEMATODE
RADOPHOLUS SIMILIS ON PEANUT (ARACHIS HYPOGAEA)

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INTRODUCTION. The banana race of the burrowing nematode, Radopholus similis (Cobb) Thorne, was first reported infecting peanuts (Arachis hypogaea L.) in Rhodesia (now Zimbabwe) in 1969 by Martin *et al.* (1). This nematode caused extensive lesions on pegs and pods of the Valencia type peanut resulting in reduced yields. Lesions were confined to the cortex of roots and to shells. Lesions were not found on or in nitrogen fixing nodules, seed coat, or seed.

The citrus race of R. similis, which causes a disease, spreading decline, of citrus in Florida (3) was not known to attack peanuts in the United States. A study to determine whether the citrus race and a banana race from the U.S. could infect and reproduce on 3 peanut types was conducted (2).

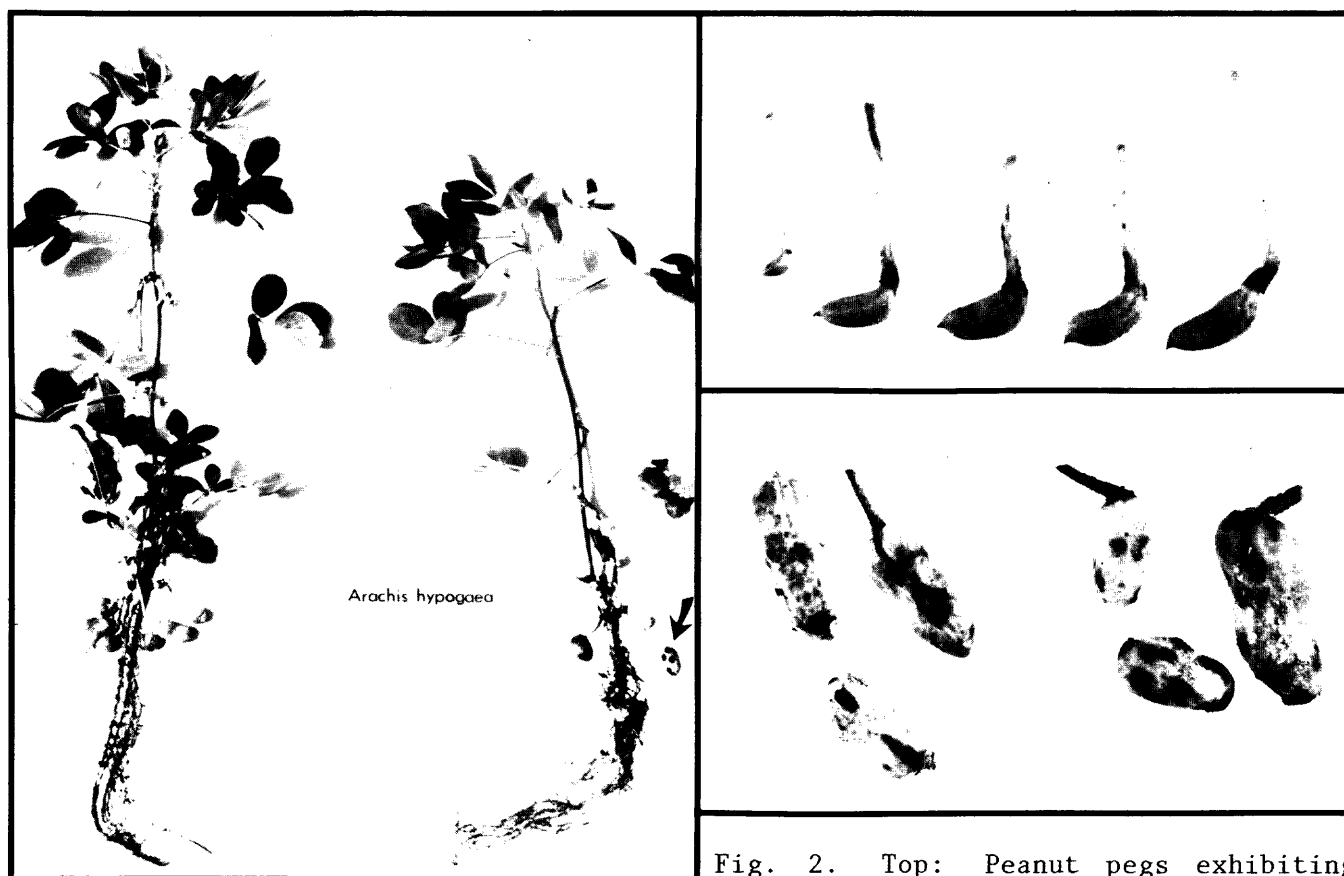


Fig. 1. Comparison between uninfected and Radopholus similis (citrus race) infected peanut cultivar. Dark lesions are visible on the infected pods on plant at right.

Fig. 2. Top: Peanut pegs exhibiting typical dark brown to black lesions resulting from R. similis infestation. Bottom: Three pods on left infected with the banana race; three pods on right infected with the citrus race of R. similis.

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INFECTIVITY. Three Virginia type peanut cultivars ('Florigiant', 'Florunner', 'Early Runner'), two Spanish types ('Argentine', 'Starr'), and a Valencia type ('Tennessee Red') were inoculated with each race of burrowing nematode. Growth of the infected cultivars was compared with uninfected controls.

All cultivars were susceptible to both races of R. similis. The degree of susceptibility among cultivars and between races varied. Roots, underground stems, pegs, and pods were infected (Fig. 1).

Greatest nematode numbers extracted from roots or shells were the banana race from the Virginia and Spanish types. The Valencia peanut type yielded the greatest number of the citrus race. Virginia types were generally less severely infected than either Spanish or Valencia types.

SYMPTOMS. Microscopic examination of roots revealed discolored darkened lesions. Pegs and pods showed discolored lesions in various degrees of development from which varying numbers of R. similis were extracted (Fig. 2). Shells and the testa (seed coat) of severely infected cultivars revealed dark brown to black irregular lesions not only on the shell but also in the seed coat (Fig. 3). All life stages of the nematode were found in the seed coat, and seed coat infection was associated only with severely infested pods. No embryos (cotyledons and embryonic axis) of seeds from pods infested with either race were invaded.

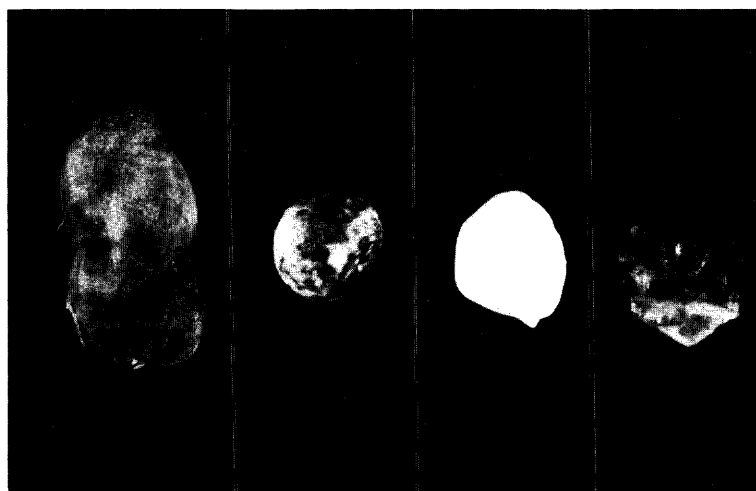


Fig. 3. R. similis infected shell and seed coat: L to R, shell, seed with seed coat, seed without seed coat, and seed coat.

NEMATODE LONGEVITY IN PODS. Infested pods were stored at 24 C (75 F) and 50% relative humidity for 7 and 14 days. No living R. similis were found from infected pods stored for either 7 or 14 days. Martin et al. (1) reported the banana race unable to survive 50 days or longer in properly stored pods; thus, recommended peanut curing practices preclude the survival and spread of R. similis in peanut pods and seeds.

LITERATURE CITED.

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